"COMMERCE & INDUSTRIES"

(LARGEST CIRCULATION IN INDIA.)

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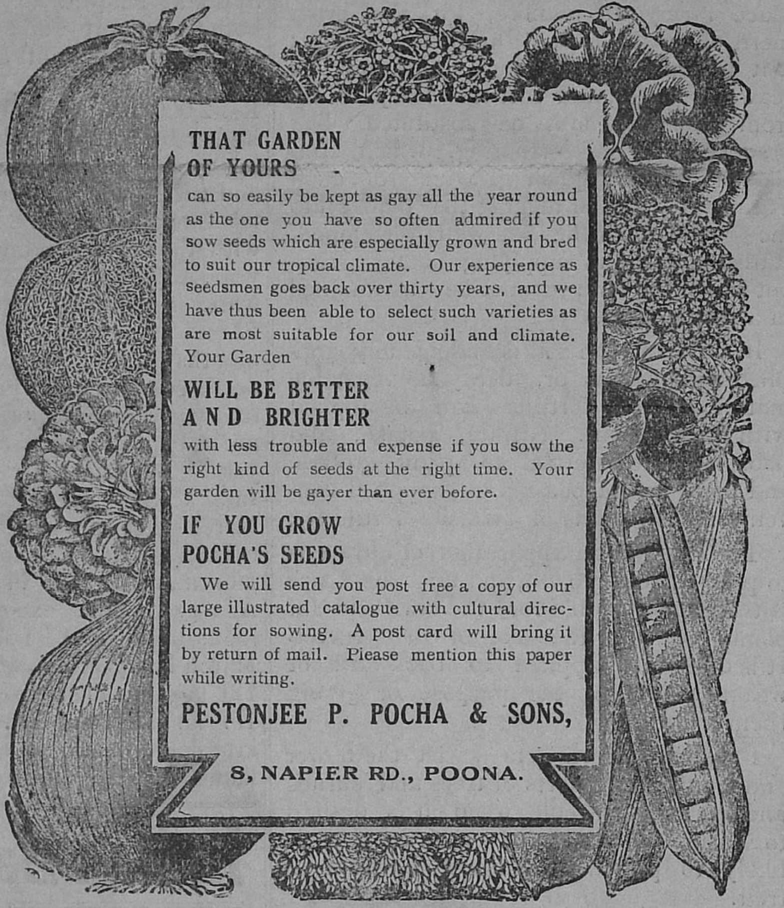

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"COMMERCE & INDUSTRIES"

FORTNIGHTLY REVIEW

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SILK

(By S. T. MOSES, M.A., F.Z.S.)

SILK the most highly esteemed of the substances in which clothing for man is made is the thread employed by certain moths of the families *Saturnidae* and *Bombycidae* for the formation of their cocoons. The term silk though generally applied to the silk of commerce, is in zoological parlance applied to the thread produced by any insect for cocoon making and so this faculty of slik production is not confined only to the commercially important species but is general among a major portion of the insect world. Silk is poured out as a thick gummy fluid secretion of the Salivary glands, which while transparent at first, rapidly hardens and dries assuming a tint of bluff yellow or brown. The principal use of silk in the insect world is in the preparation of cocoon to shelter the pupa: in our world a great industry is dependant on the excreted silk. In India the value of silk exported annually is reckoned to be over Rs 100 lakhs but much more is produced and used locally in the country itself.

The Celestial Empire seems to have originated sericulture many years even before the Noachian flood. A famous empress Silingshe personally devoted much care and attention to the cultivation of mulberry and reared silk worms and wound off the silk from the cocoons. The whole process was kept a secret the contravention of which regulation was penalised by death. However the secret oozed out. A Chinese princess brought, it is said, eggs of silkmoth and seeds of mulberry to the Ganges valley in India, concealed in the lining of her head dress. 4 Chinees girls smuggled the essentials into Japan and started the industry there where they are immortalised in temples built in their honour. 2 monks secreted the eggs in their bamboo walking sticks and took them to Constantinople from where this industry was introduced all over Europe. Italy is famous for its sericulture from the 12th century and even today the world looks up to Italy for exporting experts as is evidenced not only by the drafting some years ago of Signor Mari as director of sericulture in Mysore but also by the deputation of Signor de Vechi in 1866 to give expert help in preventing disease and deterioration of the silkworms in Mysore. In France where this industry was begun by Italian silk workers at the invitation of Louis XI today this business though confined almost entirely to the neighbourhood of Lyons, constitutes one of the most weighty elements of her national prosperity. Though the trade has been profoundly affected by the recent Great European War it is said that French taste so well represented in the Lyon silks is as little endangered by the Hun invasion as is French genius itself.

The life history of the silkworm may be described in general as follows. From the egg a small cater piller arises which rapidly increases in size till when fully grown it is about 3 inches long. During the period of growth the apetite of the grub is insatiable, the food being the leaves of mulberry or castor or even mango. After reaching the maximum length it moves about in search of a place for the erection of its cocoon. At first it throws out threads on different sides to fix the cocoon and then unwinds the thread to spin it. The pupa stage is passed in the cocoon and at last the adult moth is formed which gets out of its prison with the help of a fluid secretion which softens the silk of the cocoon. The male moth is generally smaller than the female which generally lays from 300 to 400 eggs. Soon after fulfilling their duty to the species, the moths die.

The silkworms of India belong to 2 families the *Saturnidae* and the *Bombycidae*. The *Saturnidae* include all the wild silk moths which are wholly confined in distribution to moist forest areas. Of the wild silk produced by these, the Tussur, Eri and Mug rank next in commercial value to the true silk produced by *Bombyx mori* the Chinese domesticated silkworm. This is the species which has spread from China to India and Europe and yields besides the invaluable silk, the "silkworm gut" a very important article of commerce in Italy and Japan. The gut is the fibre used by the followers of Izaak Walton for attaching their hooks and is the dried silk got by dissecting the silk glands of the grubs before they commence spinning. The wild *Saturnidae* include many species but as the grubs feed on forest trees and do not thrive in places exposed to hot winds it is not possible to rear them throughout India. *Antheraea paphia* is the Tasar silkmoth the worm of which feeds on trees and bushes in the open. Collection of Tasar is done in many forest areas e. g. by the hill Panos in the Ganjam Maliahs an important source being the wild cocoons collected by cow herds, after the trees are so denuded of leaves as to expose the presence of cocoons. Tasar is found in a variety of trees Karumaruthu (*Terminalia tomentosa*), Vellaimaruthu (*Terminalia arjuna*) Elandai (*Zizyphus jujuba*) and Gugal (*Shorea robusta.*) The silk is reelable as in the case of *Bombyx mori*; the pupae should be killed otherwise the cocoon softened by alkali is torn by the emerging moth at one end and the silk injured by the solvent. *Antheraea assami*, the Muga silk moth, is semicultivated in Assam, and forms the basis of an industry there. *Attacus cynthia* and *Attacus ricini* are the two moths which yield the Eri silk. These worms feed on the leaves of the common castor plant (*Ricinus communis*). To get the silk it is not necessary to kill the pupa, it may be allowed to bore its way out of the cocoon and the silk not reeled but spun. The grub of *Cricula trifenestrata* (which at times thoroughly defoliates the mango trees (*Mangifera indica*) possesses poisonous spines. People are afraid of handling it not only because of its poison but also because of a wide-spread belief that contact with it entails leprosy! It is abundant in Bengal and Burma though it is only in Burma that some attempts have been made to start an industry in spun silk from this species

Silkworms are not immune to diseases. Pebrin disease the most important of these causes great anxiety and greater losses to the sericulturist. It is caused by the presence of the spores of a unicellular myxosporid *Glugea dispar* in the tissues of the silkworm particularly that of *Bombyx mori*. Another disease the muscardine is caused by *Bottrytis bassiana*. The diseases being infectious a tray of worm can soon be destroyed when once the disease appears. Old and fermented leaves of the mulberry should never be their dietary. The eggs bought or kept for rearing should be those laid by a moth in all vigour and health and not diseased. The differentiation between a healthy and diseased moth is possible only to the sericulturist who has had some biological training or at least who knows how to handle a microscope. But all silkworm keepers can never be experts in microscopy and so the only way to avoid this difficulty is to buy the eggs from places where such examination is made.

Though the silkmoths are prolific it is very disappointing to find that not even a tenth of the eggs laid live to reach the image stage. Besides the ills which "silkworm" flesh is heir to, the silkworms have enemies among many groups of animals. Wasps and bugs (free living representatives of our notorious friends the bed-bugs) feed on them. The praying mantis our "Kumbidu Puchi" so called from its pharisaical habit of apposing the ends of two appendages and lifting them up as if in an attitude of worship or prayer is a notorious enemy of our silk worms. Birds, bats and lizards are never averse to a diet of silkworms.

Mulberry silk is produced in Kollegal and Coimbatore the acreage under mulberry cultivation being about 12000. French worms imported to Pusa do not compare favorably with the Indian ones, for apart from the difficulty of importing them, the annual result is only one crop of cocoons and not 2 or 3 as in the case of the Indian. In Ganjam Malahs, Panos rent portions of jungle tracts and collect silk which is mainly sent to Berhampore. The rearing of *Bombyx mori* is a recognised industry in the Mysore state where from the days of Muhammadan rule, sericulture has been and is a prosperous concern. At Bangalore the Salvation army is running the Tata silk farm where young men are trained in this industry. The success of the Government silk farm in Travencore has encouraged the local Agricultural department to introduce the industry among the depressed classes. Training in silk school, lands for mulberry growing and even a grant for maintenance for one year are given to boys of the Pulaya, Paraya and other classes. The above list which includes nearly all the silk rearing places in South India is indeed very poor considering how much has been said by even English writers in India as to the extension of silk rearing in India. But there are difficulties which have to be contended against in such a possible extension e.g., the co-ordination of all the following

conditions viz. equable and moist climate, a healthy race of silk worm, a good supply of the food plant, tolerably cheap labour and lastly such a demand for the silk as to ensure the financial success of the scheme. Silk can never descend to the cheapness of the finest vegetable fibre say flax. The failure of sericulture in U. S. A. is said to be due to this reason. Waste mulberry silk known here as "Chasam" is profitably exported from Mysore and Kollegal to France and Italy.

In our Presidency there is an extensive production of silk piece-goods, the silk of which is derived (1) locally i. e. from Mysore and Kollegal (2) from China through Bombay, Madras and Tuticorin by sea and (3) from Bengal by rail. The quantity of raw silk imported from China is increasing year after year. The value of imports last year is estimated to be over 18 lakhs. This business is carried on in Ganjam, Anantapore, Madras, Chingleput, Arcot, Trichinopoly, Tanjore, Madura, Salem, Coimbatore etc. The industry is wholly a hand loom one carried on as a cottage industry. The Devaravallus of the north, the Kaikolars and Pattunoolkars of the South monopolise this industry. The "silk thread" men (Pattunoolkars) are said to be the descendants of Gujeratis who were invited by Tirumala Naick of Madura in the 17th Century to settle there and introduce the industry. A strong evidence of the migration of the Gujeratis is the fact that these Pattunoolkars speak a dialect of Gujerati called Khathi or Patnuli.

Piecegoods manufactured are of 2 kinds, one of pure silk and the other of silk mixed with other materials. Pure silk stuft is woven at Arni, Wallajapet, Salem, Chidambaram, Kollegal, Tanjore, Kumbakonam, Trichinopoly, Madura, Pudukotah, Kampli, Hampasagaram, Tadpatri, Madras, Conjevaram etc. In Tanjore and Kumbakonam pure silk saris are made and also loin clothes for Mahomedans which are largely exported to Penang. The clothes made are used as turbans, shoulder clothes and handkerchiefs. Fifty years ago Tadpatri in Anantapur was fomous for its pure silk clothes but now the industry has nearly died out. Similar fate has befallen the silk-carpet industry of Ayyampet in Tanjore, where these rugs were made of silk floss. Weaving of cotton with silk is carried on in Salem, Chidambaram, Panruti, Madras and various other places. Salem is famous for its nice white clothes with silk borders. Kornadu near Mayavaram is fomous for its 'Kornad' sarees the greater part of which consists of silk. Our pure and mixed silk piece goods are mainly consumed in the country only a small proportion being exported to Burma, Ceylon, Straits Settlements, Federated Malay States, Natal, Mauritius, Fiji, Sumatra and such other places where Indian emigrants are found.

The handsome clothes ornamented by the introduction of silver and gold embroidery in Kollegal, Tanjore and Kumbakonam, have never been beaten by anything which the European manufacturers have as yet produced. The silver and gold thread are usually got from Europe though an expensive variety is obtained locally from Kumbakonam. Of late there has been a great decline in the imports of gold and silver thread usually obtained from France.

Silk is usually dyed locally, vegetable dyes e. g. Kameli powder from Manjanai (*Malleotis Philipinensis*) (for red), the base of Nelli (*Phyltanthus emblica*) (for light brown) etc., being used. But ever since the introduction of alizarine dyes, the tedious process of extracting the vegetable dye made the weavers give up their old methods but they now find the old dyes were more permanent.

The silk weaving industry has on the whole during the past years been on the decline owing to the competition of cheap European machine-made goods. But during the last year an impetus was given to the industry and there was a greater widespread demand for silk cloth. This is explained in a Blue book 'as having been due to the higher prices of cotton goods and the prosperity of some sections of the community,' though to the non-official it is obviously due to the Swadesi spirit of boycotting the Western goods!

An interesting experiment attempted by the French people may be mentioned here. The spiders which are scientifically not 'insects' but close relatives of the scorpion also produce different kinds of silk one kind to weave the little parlour' for the prey 'to walk in,' another to build cocoon for the innumerable young or another which is the strongest to swing themselves down on their descent or jump through the air. Many years ago, in France, successful attempts were made to utilise the spider's silk. Stockings and mittens made from it were on sale. They were beautiful but too delicate for wear hence were worth nothing except to curio collectors! Besides the quarrelsome spiders, unlike the quiet and well behaved silk-worms, when in confinement were busier in gobbling each other up than in silk production! Another difficulty wa the small quantity of silk obtainable from a huge number or spiders. In France 1 lb. of silk was got from 7,000 spiders! Though hundreds of species of web-spinning spiders occur in India nothing has been done even by way of experiment.

A paying branch of scientific research nowadays is to devise cheap substitutes for economic articles bequeathed to us by nature and made in her own laboratory. The use of silk as a weaving fabric obtains largely because of the durability of true silk. Even in the case of the famous Coa vests of Coas made of silk woven into a delicate gauze which revealed rather than clothed the form, it was the durability of the fibre that lent the vest its charm. But the advanced state of our civilisation which we have attained does not care for this characteristic and requires people not to be clothed but only costumed!! Artificial silk has now been successfully manufactured from Cellulose. It is said that material worth Rs. 30 could produce silk worth over Rs. 10,000.

GOLD PRODUCTION IN MYSORE.

By Mr. K. S. ABHAYANKAR, B.A.

MYSORE has now acquired a considerably important place among the gold fields of the world. Practically the whole of India's output of gold now comes from that State. The actual percentage is about 95. It may be noted that another Indian State, Hyderabad, ranks second as a producer of gold in India, though its production is very low as compared with Mysore. The gold producing area is practically confined to the Kolar District in eastern Mysore about 40 miles from Bangalore. Numerous gold mine workings of an unknown age were found in the State. Pliny, in fact, makes mention of Indian gold coming from the country of the Nareæ (the Nairs) and thus practically from Mysore. Gold mines at Marikuppam were worked by Tippu. But the success of the Kolar Field dates only from the eighties of the last century. We find from the Administration Report of the Sate for the year 1870—71 that the output of gold in the State consisted that year only of the gold dust found in the washings caused by the monsoon rains from the Hemagiri (mountain of gold) Hills in the Hulliyurdurga Taluka of the Nandidoorg Division. The washers then realized about 4 annas worth of gold in a day's washing. In the year 1873—74 only three seers of gold were produced in the Kolar District. But the Administration Report of that year remarks, "There is reason to believe that a proper system of working would show existence of a considerable quantity of gold ore in certain Districts. The prosperity of the Kolar Field was definitely established by the year 1885 and since then gold mining in the State has created great interest. But as pointed out by Mr. Rice in his Gazetter of Mysore, ". . . although the country has naturally benefitted greatly thereby, the principal transactions are pretty much confined to England, where all the capital has been raised. . . . The dealings in shares take place entirely on the London Stock Exchange and but an insignificant amount is held in this country, none of it probably by Natives, except what shares the Mysore Government hold." Thus the development of the field has been almost entirely due to foreign capital and foreign enterprise, and even to-day Indian genius gets but little encouragement in such concerns. There is a considerable body of opinion in this country which hold that minerals had better been left undisturbed in the ground than that they should be exploited by foreign capital.

It is to Mr. Lavelle, a resident of Bangalore that credit is given for being the first to see the possibilities of the field. A gigantic scheme for its exploitation was taken in hand about the year 1873, but it was only after the year 1885 that the prosperity of the field was definitely established. The year 1902 forms an important land mark in the history of the Kolar Gold Field, because it was in that year that electrical power was first brought there from the falls of the Cauvery river at Sivasamudram. The supply has since been added to and its continuity has been assured by the construction of the Krishnarajasagar dam. Besides this the Kolar Mines Power Station forms another source of power supply to serve as a stand-by in case the main supply is interrupted. Besides the sum the Mysore Government receive as royalty from the mining companies, they are paid for the supply of electrical energy.

As regards equipment and machinery, the mines are kept up-to date and various improvements to keep down working expenses have been recently introduced; an interesting example of which is afforded at the Edgar's shaft where the fifty coolies "go down the shaft 2500 feet in about two minutes, a marked improvement over the old method which took nearly half a day to go down and come up by means of ladders." A mining rail road runs right through the Gold Fields and is linked with the M. & S. M. Railway at the Bowringpet Station on its Madras-Bangalore section. The whole face of the land has been changed and as rightly remarked by a journalist. "It is often said that a visit to the mines of Kolar transports one to a land of enjoyment

where a sudden wave of the magical wand of science and industry reveals to him an endless series of animated pictures flitting across nature's stage in quick succession."

The chief mines are the Champion Reef, Origam, Nandidroog, Mysore and Balaghat. The Mysore Mines stand first in point of yield. The Balaghat mines which were recently organised with a view to extended development show encouraging prospects. No licenses or leases have lately been current outside the Kolar Gold Field area though Gold Mining operations have at intervals been pursued elsewhere in the State. In the year 1918, Mysore produced 5,04,412 ounces of gold while the total for India was 5,36,118. For the next year the figures were 4,85,248 and 5,07,260 respectively. Then in the year 1920 the total output of bar gold in Mysore was 4,88,056 ounces and during last year 4,42,112 ounces. But the production of the mines had in the year 1905 reached a higher figure and exceeded 6,00,000 ounces. The reduction of output in recent years has among other causes been ascribed to the difficulty of getting essential supplies for the mines and inadequate supply of skilled labour.

Till the year 1914-15, the whole output of gold was sent to England in the form of ingots for refining but during the war time considerable portion of it was taken over by the Bombay Mint and was coined into gold mohurs equivalent in weight and fineness to the sovereign.

(United India and Indian States).

STATE AID TO BANKS.

Travancore State.

The success of a Joint Stock Bank depends to a very large extent on the amount of money which it can secure from the people in the shape of deposits. The aid of the State to the Bank will help in creating the confidence of a large section of the public in the institution; for, it is clear that Government will not invest their funds in a Bank unless they are fully convinced of its soundness and solidarity. The aid of the State is all the more necessary during the early years of the Bank's life, to enable it to make a good start by securing deposits free of interest for a term of years, within which the Bank would be able, on the one hand, to attract deposits on business terms, and on the other, to establish healthy relations with the mercantile and other communities. All the banking institutions have generally received State aid in their early stages. Such aid is also essential in order to enable the Bank to compete sucessfully with the established organisations in attracting deposits and to work without loss from the commencement. The advantages of a State-aided Bank are many and varied. The bank can use for productive purposes the available balances of Government Treasuries which at present remain quite idle, bringing no good to anybody. It also helps the Government materially by taking up the work of the Treasuries in convenient centres, and carrying it on more economically with the minimum cost to Government. Even if the treasury work is not transferred to the Bank, the system of payment by cheques, popularised by the Bank, relieves Government Treasuries of a considerable extent of cash transactions. The State-aided Bank with its working capital will be able to act as the Bankers' Bank and Clearing House for the several Joint Stock Banks already existing. It will also be able, with the help of foreign connections to render substantial aid to the export and the import trade of the country, especially in respect of the trade with British India, the volume of which amounts to more than Rs. 8 crores annually. The existing local Banks, with their slender working capital and reserve fund will hardly be able to establish any foreign connections. The State could utilise the agency of the State-aided Bank, in lending money for the development of industries as is now done in Baroda. It could also lend money to well established Co-operative Societies. The State aid enables the Bank to thrive and incidentally to build up in a short period a progressive stamp revenue to the State, by stimulating monetary transactions and by popularising the use of cheques and bills of exchange. The active co-operation of the Bank will be of immense help to the State on occasions of issuing State Loans. The Bank of Mysore contributed nearly 50 lakhs for the Mysore State Loan of Rupees one crore issued last year, and it is again contributing nearly Rs. 36 lakhs to the State Loan of Rupees one crore issued during the current year. A State-aided Bank is expected to give greater attention and facilities to the public at large than a Government Treasury. The current and deposit Account Departments of a Bank confer to the people an invaluable convenience in the matter of making payments to Government which has now to be effected by the primitive method of actual payment of cash or Notes to Treasuries, located according to administrative needs without reference to the commercial requirements. It is thus abudently clear that a State-aided Joint Stock Banking Agency will be useful alike to the State and to the general public while it will afford substantial help in the development of Trade, of Commerce, of Agriculture, of Co-operative efforts and of Industries in general, in the country.

(Trivandrum Daily News).

KHADDAR.

[Mrs. Besant writes in *New India* :—

But what is the Khaddar-wearing "class of His Majesty's subjects"? And since when has the wearing of hand-spun and hand-woven cloth become an offence? We know of high officials who wear Khaddar of a very fine kind, because of its beauty and strength. If hand-spinning and handloom weaving has become an offence, then the practice of one of the oldest crafts in India, still practised by many thousands of weavers, is liable to penalties. The Madras Government should itself be charged with aiding and abetting, for it not long ago sent weaving parties about the Presidency, with the object of reviving and improving the industry. Khaddar means "pure," and pure is defined as meaning "hand-spun and hand-woven". In the Art and Crafts Exhibition some lovely specimens of the work of Benares crafts-men were shown belonging to myself, among others. These are Khaddar, according to Mr. Gandhi's definition, and were bought long before he came back to India. The early cloths to which the name was given were very badly woven by amateurs out of equally illspun yarn, and so disgusted everyone with artistic tastes. But now, very good stuff goes under the name, and what law forbids the wearing of it? Headmasters and Principals of Colleges may forbid it, if they are foolish enough to do so, as some Christian teachers forbid the clean and sanitary dhoti and shirt, and force their unlucky students to go to school in ugly and dirty coats and trousers, daily soaked in perspiration and unwashable. The making of sumptuary laws, however silly, is within the authority of the chief pedagogue of any institution, and after all, boys need not go to missionary schools which insist on turning their scholars into scare-crows. There are only some, even Christian schoolmasters who make themselves thus ridiculous by sartorial tyranny.

When Government officials spring back into the old grooves of bureaucracy, and exercise their powers in these petty ways, they are not acting in the spirit asked for by H. M. the King, when he sent the Reform Act to India in 1919, and also sent his Royal uncle thither in 1921, to proclaim in his name the beginning of Swaraj.

Khaddar Scheme.

The Congress Working Committee held a three days meeting in Calcutta last week.

The consideration of khaddar scheme was continued for two days. The scheme consists of two parts in the first part it is propsed to encourage Provices to secure greater and better production of khaddar by means of advances of money on condition that every Province raises an equal amount. It is also proposed in the scheme that vigorous propaganda should be carried on for the widespread use of khaddar. The second part proposes to establish a Central Board with four departments. Their main work will be to supervise, control and advise and also to find markets for the surplus yarn and cloth produced. A sum of Rs. 17 lakhs is proposed to be placed at the disposal of the Board. Provincial autonomy in the matter of production is proposed to be guaranteed, while provision has been made in the scheme for imparting technical advice for greater and better production of khaddar by the Provinces. It has been decided not to publish the scheme till it is considered and adopted at a fuller meeting of the Working Committee to be held shortly at Bombay. The General Secretary, Mr. V. J. Patel has been asked to fix the date of the meeting in consultation with the President as soon as possible.

GOVERNMENT OF INDIA STORES.

The President and members of the Indian Merchants Chamber in Bombay expressed to the Hon'ble Mr. Innes their strong disapproval of the methods of purchasing Government stores in England. They plainly stated that the interests of India were not properly looked after. Mr. Innes admitted that the High Commissioner for India in London gave preference to British manufactures to a limited extent but Government had since asked that such action should be stopped. An extraordinarily selfish aspect of this preference was that tenders submitted by foreign (non—British) manufacturers were disclosed to British manufacturers. Probably this had a useful effect in reducing the price of stores purchased for India from British manufrcturers. But the hypocrisy of calling for foreign tenders is transparent. Mr. Innes said that this practice will be stopped. The Chamber wanted that tenders must be sent to India instead of being disposed of in London and pointed out that this was the practice in self-govern in gcolonies.

The disgusting nature of the stores purchase system at the sacrifice of this poor country's interests has been exposed but full justice cannot be expected until complete self-government is attained.

"COMMERCE & INDUSTRIES"

MADRAS, 1st MAY 1922

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NOTICE TO CORRESPONDENTS.

The Editor invites Secretaries and Managing Directors of Joint Stock companies and other correspondents to send him their periodical Reports and Balance Sheets and other communications early in the month in order to insure insertion in the following number; but he does not undertake to publish unathenticated communications, or to return such that are rejected. Contributions are also invited from businessmen and others upon current matters affecting, directly or indirectly, commercial and industrial interests. Letters from Correspondents seeking information or making suggestions and Enquiries from merchants, manufacturers and others will receive attention.

EXPLOITATION OF CHINA

"FOREIGN Trade of China" is the subject of an interesting article contributed by Mr. John J. Macfarlane to "*Commercial America*". German writers, he says, have been prophesying that before ten years had elapsed there would be a war between Japan and the United States for the mastery of the Pacific and with England for the mastery of the seas. To prevent such a catastrophe the Washington Conference was called by President Harding with a view to reconcile the national aspirations and find a satisfactory solution lest the ordinary course of events might lead to another world war more fruitful than the last.

The competition of manufacturing nations of the world for a larger share of the trade of China was the crux of the whole trouble and commerce was the urgent cause of aggression in the Pacific. Several nations had acquired, either by force or bribery, a monopoly of the trade of certain portions or interests of China, which they determined to hold in spite of the open door policy advocated by the United States. A brief consideration of its present condition and its future possibilities will show how important and necessary is China and its trade to the manufacturing countries. China has a population of 400,000,000 or more than that of any other country in the world and an area of over 4,000,000 square miles which is only exceeded by that of Russia. China offers the best and most promising market in the world for manufactured products, because to-day 90 per cent of it people are engaged in agricultural pursuits. China developing its manufacturing industries would become an active competitior for its own and other markets with western nations and Japan; while China remaining an agricultural country for ever with its people continuing the opium-eating habits would mean an open door to the nations of the world for exploitation.

China has an ample supply of coal and iron, the two most important raw materials for the success of a manufacturing nation. According to the Geological Survey Department, her coal reserves are estimated at 45,000,000,000 tons and coal is found in every province. The province of Shansi has anthracite fields greater in area than those of Pennsylvania. That China imported 1,254,000 tons of coal valued at *dol.* 17,000,000 in 1920 shows that China is carrying coals from Japan.

China has an iron reserve of 1,000,000,000 tons to supply her needs for many years if industries are developed. The Tayeb iron works occupying 670 acres and having a capacity of 240,000 tons are the largest and expected to become the most modern iron and steel foundry in Asia. The Hanyang iron and steel works on the Yangtse opposite Hankow has a capacity of 150,000 tons and an area of 170 acres. In 1920, about 650,000 tons of iron ore and 180,000 tons of pig iron were exported. The works at Hanyang and Tayeb if properly developed will surely compete with foreign countries, besides supplying the needs of China.

China being poor and disorganised without technical and business education, is unable to make any progress in improving the means of communication, both railroads and ordinary roads which are unsuitable for modern traffic. China has 10,000 miles of railroads mostly built with foreign capital which is paying very large dividends. During the next 20 years, 20,000 miles more will be constructed involving an expenditure of over 10 billion dollars for roadways and rolling stock which will be largely imported from foreign countries This is the main reason why the capitalists of Europe and the U. S. A are trying to secure a large interest in them. The Railroad Commission has already introduced improved methods of keeping their accounts and secured the gradual introduction of standard cars and other materials and has brought about a harmonious working of the various foreign and Chinese railroad systems which promise good results in future. With the improved communications arising from 20,000 miles of railroads, Chinese trade will amount to 65,000,000,000 taels or say 50,000,000,000. dollars.

The value of the exports from China in 1920 was 672,000,000 dollars as compared with 876,000,000 dollars in 1919 and 294,000,000 dollars in 1913, in spite of the decrease in the demand for Chinese raw materials owing to the adverse trade conditions in foreign countries. China is the largest producer of silk in the world and consumes over one-half of its production. She exported in 1920 about 41,877,000 pounds of silk to foreign markets. The U. S. A. being the largest silk manufacturing country in the world imported 30,058,000 pounds in 1920. The exports of silk and silk products in 1920 amounted to 127,000,000 dollars, raw silk alone amounting to 95,000,000 dollars and silk manufactures to 32,000,000. Second in importance are the exports of beans and their products valued at 105,000,000 dollars in 1920, of which the value of beans amounts to 30 million dollars, bean cake to 52 million dollars and bean oil to 18 million dollars. The manufacture of bean cake and bean oil is one of the most important industries of China. At Davien, 62 mills tanks have been erected for the oil which is shipped to Europe in tank steamers. In 1920, China exported vegitable oils to the value of 40 million dollars, peanut oil 11 million dollars, wood oil 8 million dollars, skins and hides 27 million dollars and eggs 26 million dollars. China exported oil seeds worth 22 million dollars of which sasame amounted to 14 million dollars.

China is spoken of as the Land of the Blue Gown, because that is the dress of the hundreds of millions of its people of the middle and lower classes. This dress is made of cotton which is so plentiful. China ranks third among the countries of the world as a producer of raw cotton, being exceeded by the U. S. A. and India.

In 1920 China imported cotton goods worth 306 million dollars including cotton yarn worth 97 million dollars from Japan, Hongkong and India. The difference of 209 million dollars worth of cotton goods came from Japan and the United Kingdom. The cotton manufacturing industry has of late made considerable progress. In 1920, there were 63 mills with 1,422,832 spindles, some 20 mills being under construction. The Japanese own 16 mills and the British own 4 large mills in Shanghai. These mills mostly confine themselves to the production of yarn.

In 1920 China imported metals and minerals worth 76,300,000 dollars, Kerosine 67 million dollars mostly from the U. S. A. and Sugar 48 million dollars mostly from Hongkong and machinery worth 29,800,000 dollars of which textile machinery was worth 8,860,000 dollars mostly from the U. S. A. owing to the great extention in the cotton mill industry. The U. S. A. is the chief supplier to China in iron and steel, machinery and railway supplies and motor cars. It is said that the Washington Conference has not been entirely satisfactory to the Chinese, though it has done much to free China from the interference of foreign countries in its affairs.

From these facts, India has much to learn. Her contribution to the import and export trade of China is negligible. By establishing her own manufacturing industries to meet her own requirements in Railway supplies and textile goods, she can help herself materilly and also help China in suppling her needs. For enterprising Indians, China offers ample field for business activity. Will Industrial India wake up?

COMMERCIAL EDUCATION.

The study of commercial subjects alone does not form what is called "Commercial Education" necessary for a business career. A smattering of book-keeping and shorthand and a knowledge of the mechanism of the typewriter is not the end and aim of Commercial education. Every young man entering a commercial house should have "some elementary notion of the development of industry and commerce, of demand and supply, and the geographical conditions which determine the production of foods and clothing; he should know the principal markets for these, how the commodities come from the market to the wholesale house, from the wholesale house to the retail house, and how they are distributed to the populace at large; how we pay for them; and the principles underlying credit, banking, and exchanges. He should know something of the laws of

demand and supply, and the facts that go to determine the worth of a man's labour." A commercial syllabus should include not only a theoritical knowledge but a practical application of the business principles in their widest sense.

Business Practice.

Pitman's Journal. has an article by E. J. Hammond, A. C. I. S. on business practice which is a subject of great interest to commercial students. It is known under various names such as "Theory and Practice of Commerce," "Methods and Machinery of Business," "General Commercial Knowledge" and "Office Routine." He deals the subject by the method of "Question and Answer."

Bills of Lading.

Q. What is a bill of lading, and to what extent is a of lading a negotiable instrument?

A. A bill of lading is a document signed by, or on behalf of, the master of the vessel acknowledging the shipment of goods and containing the terms and conditions upon which the goods will be carried to the port of destination. It must bear an impressed sixpenny stamp.

Bills of lading are not "negotiable instruments" inasmuch as a *bona fide* holder for value does not acquire a perfect title "free from the equities." They possess however, some of the elements of negotiability as they can be "assigned" or "transferred" by delivery and endorsement for value; the property in the goods is then vested in the transferee, but the latter acquires no better title than that possessed by the transferor. In the event of any fraudulent or wrongful dealing with the bill of lading, the true owner has the right to reclaim possession of the goods represented by the document upon proving and establishing his title to them. Bills of lading drawn "to order" and—or endorsed in blank often form one of the supporting documents of a documentary bill of exchange.

Comparing bills of lading with dock warrants [which are negotiable instruments] it is to be noted that, for the protection of the shipowner, the former are usually claused "weight, contents, and value unknown," whilst the latter definitely particularize specified commodities.

Basis of Freight Charges

Q. How is shipping freight calculated?

A. The basis for the calculation of freight is either at per ton weight or per ton measurement [at the shipowuer's option] plus a percentage [varying from 5 per cent upwards according to custom and usage of trades and ports] for primage. Primage was formerly an allowance to the captain of the vessel, but it is now retained by the shipowner as an addition to the freight.

Heavy goods, for example, machinery, etc., are usually charged by weight, and soft goods, for example, drapery, millinery etc., are charged on a measurement basis, usually 40 cubic ft. a ton, but the ton measurement varies in different trades and ports.

Where barrels, or other packages of irregular shape are shipped on the measurement basis the greatest length, width, and depth are taken when computing the cubic feetage. For examble, the diameter of a barrel at its ends (the narrowest part) is 2 ft. 3 in., but at its centre (the greatest girth) the diameter is 2 ft. 6 in., and its height 4 ft. This package will be charged as if it were a case measuring 4 ft,—2 ft. 6 in. It is obvious that this method is quite fair and equitable, as the vacant space between the barrels cannot be used by the shipowner.

On the Continent and also in our own import trade from countries using the metric system, the basis of charge is usually, the metric ton of 1,000 kilos.

Lost Bill of Lading.

Q. If a shipment arrives before the bill of lading can the consignee obtain delivery without it? If so, how? Will he require anyone else's help?

A. It is customary for the bill of lading to be surrendered to the shipowner before delivery can be effected, but in its absence delivery may be obtained upon the consignee signing a letter ef indemnity holding the shipowner harmless against all claims, losses, and expenses that may be incurred by reason of the goods being delivered without production of the bill of lading. The consignee must produce evidence of ownership (letter of advice. etc.), and, further, undertake to surrender the bill of lading when received. Many shipping companies require the letter of indemnity to be supported by a banker's guarantee.

The ship's manifest will contain particulars of all cargo on board the vessel, usually with the names of consignees against each consignment. Where, however, the consignor to obtain a monetary advance) has hypothecated the the documents with the bank, the bills of lading are made out "to order" and manifest will bear a similar record. Obviously, with such shipments, the shipowner will need to be fully protected.

Where, however, continuous shipments to the same consignee are being effected, the shipowner may be able to determine who is the true consignee on examination of the shipping marks.

IMPORTER.

Q.—Who is an Importer?

Importers may be devided roughly into *merchants*, *agents*, and *brokers*. The term *Merchant*, though often used loosely, strictly signifies one who is engaged solely in buying and selling merchandise. The import *merchant*, who may be a general importer or a specialist, buys at his own discretion, from overseas, goods that he aims to sell at a profit. He often holds stocks at the docks or elsewhere, and has a City office or showroom where samples may be seen. The *agent*, again, may be either general or specific, and may hold sole agencies for certain overseas producers whose goods he will push. The *broker* operates mainly in the foodstuffs, wool, cotton, and rubber trades. He is usually an expert in a special class of goods, and on instructions from importers he will sell, or on behalf of others he will buy, produce at public auction.

EFFICIENCY POINTERS.

1. Toil at your shorthand till you reach a high level of excellence. Make shorthand your beloved art-science. 2. Aim to be the most skilful reporter and fastest typist in your town. 3. Make your service money-winning service. Satisfy your employer fully. 4. Accustom yourself to work under pressure. 5. Express and develop your personality. This will increase your productive power. 6. Convince yourself of the worth-whileness of your job. You may be only a unit, but see to it that you are really an effective unit. 7. Learn the art of "othering" yourself. If you get your chief's view-point, for example, you can work for him to greater satisfaction. 8. Make all your work as joy-arousing as possible. Throw yourself into it as though it were a pleasurable game of golf or hockey. 9. Always be ready to help others in life. Every day will furnish opportunities.

MINES AND METALS

Aluminium

Queensland Government Mining Journal writes:—

The Marvels of Aluminium.—Ever since aluminium was produced in a commercial form the greatest interest has been taken in its application to various engineering structures where lightness with strength is desirable. It was soon found that when aluminium was alloyed with other metals its strength was greatly increased without any great change in weight. Various alloys of aluminium have been used in the structure of airships and aeroplanes, and the results have been so promising that a special committee was formed in Great Britain to undertake systematic research of the properties of aluminium alloys. A report recently issued by this committee embodies the results of seven years of research conducted in the National Physical Laboratory, which is subsidised by the British Government. This research has resulted in the discovery of many alloys which are of great promise for practically all kinds of engineering, particularly motor-car manufacture, railway rolling-stock, internal combustion engines, and steam engineering. The only problem awaiting solution is the production of those alloys on a commercial scale. Already a beginning has been made in this direction by a British Government factory; and British manufacturers are looking closely into the possibility of producing some of these wonderful substances for regular use in place of steel.

Aluminium the Most Abundant Metal.—Aluminium is the most abundant metallic element. It is an essential constituent of nearly all rocks except sandstones and limestones (according to the United States Geological Survey, Department of the Interior). Though it is more abundant than iron it has been of no use until the last twentyfive years, for it is locked up so tight with oxygen that only the electric furnace can easily separate the two elements and give us the metal for our pots and pans and the thousand other things that we now make of it, including even the bodies of some automobiles and certain parts of some aeroplanes.

The Indian Tea Crop

London, Feb. 20.—Cabled particulars of the Indian tea crop position show that the total crop in North East India on February 2 was estimated at 242,000,000 lb. as compared with 311, 000,000 lb. in 1920, of which 228,750,000 lb. may be accounted for as follows:—136,750,000 lb. shipped; 41,750,000 lb. to be shipped; 42,500,000 lb. sold at Calcutta; 7,750,000 awaiting sale at Calcutta; leaving a balance of 13,000,000 lb. which may be accounted for by stocks in transit.

INDIA AND PROTECTION.

Sir Alfred Chatterton writes in his note to the Indian Fiscal Commission :—

It is urgently necessary that in India a modern industrial system should be established so that, as far as possible, in essential requirements the country should be independent of foreign sources of supply. I am, therefore, in favour of any measures, including protective import duties, that will help us to achieve this object.

I am wholly opposed to the levy of Excise duties as vexatious and inequitable except where it is necessary to control the trade, and to any kind of restriction on the establishment of industries in the country with outside capital. The public interests demand an effective internal competition to secure efficiency in industry and prevent the growth of monopolistic tendencies.

India will never obtain a well-balanced industrial system till attention is directed to the Mechanical Engineering industries to a much greater extent than has hitherto been the case. I am therefore totally opposed to specially favourable tariffs for iron and steel machinery and plant. The mills, factories and other industrial undertakings that enjoy the benefit of a revenue tariff can well afford to pay import duties on the same scale for their machinery and plant. I have considered the special case of machinery for agriculture, the use of which, I admit, it is very desirable to encourage; but this end is more likely to be reached when such machinery is locally made than when it is imported. No exception, therefore, is necessary.

It is essential that the engineering industries should be developed and to achieve this, they should at least enjoy the same measure of protection as the manufacturing industries. If more than this is necessary, I should be in favour of even higher duties as it is a vital matter to the safety of the country that it should cease to be dependent on a base 6,000 miles away, the line of communications with which is so extremely vulnerable.

The Sugar industry in India is in need of special treatment and this is recognised already by the 15 per cent duty levied on imported sugar. India ought to be self-supporting in the matter of sugar; but this can only be effected by weaning the ryots from their wasteful methods of converting the cane into jaggery. The duties on sugar might well be 50 per cent instead of 15 per cent and there should be a heavy duty on molasses. This would help to bring home the advantages of a more perfect method of extraction combined with suitable purification or refinement. The manufacture of jaggery or gur entails a total loss to India of at least thirty crores a year and possibly more. To eliminate this waste and at the same time obtain a substantial increment to the revenues makes an overwhelming case for enhanced sugar duties.

The Silk industry in India might also be greatly expanded by analogous treatment. But no Fiscal policy will alone achieve this end. It is for the Departments of Industries and Agriculture to initiate the improvements which are possible. Protective duties will only protect when they impede imports and their justification can only be ensured when suitable measures are taken in India to obtain the object in view.

How to Evolve a Better World.

A correspondent writes to the *Hindustan Review* :—

The problem of rebuilding our world is the problem of the harmonious adjustment and the co-ordination of production, distribution and consumption.

Europe to-day is in bankruptcy. The last war has toppled down crown and scepter. The social system is disrupted. It is all confusion—instability. Who knows, this perhaps may be the last of the much boasted civilization of Europe! But there is a faint glimmer of light twinkling in between these dark, dismal clouds of chaos in Europe.

The Co-operative Movement aims at righting the economic wrongs of the present Capitalistic Society. It has nothing to do with political manoeuvering. It first organises the people as consumers. This constituency of consumers supplies itself with clean, reliable goods at market prices. But the profit does not go to the middle-man as in private business. Here the profit is accumulated. Part of it goes to defray the expenses of educating the people, part goes as dividends. A highly efficient and advanced Co-operative Society is at once a *consumer, a producer*, and a *distributor*.

The Co-operative Movement has attained the highest pitch of efficiency in Germany. The German efficiency and genius are being brought to bear on this important economic question of society; how to organize the raw materials efficiently, how to manufacture them efficiently, how to distribute them equitably, how to consume them properly. The War made of Germany a wreck. She would have found a bottom in the ocean of chaos; but the Co-operative Movement held.

In a way India's problems are more complicated than the problems of Russia or the rest of Europe; and in a way, they are simpler. The problem of problems confronting India is: How to get rid of the British occupation of the land? Seventy-five per cent. of the present ills of India are of her own making; twenty-five per cent. are due to the British domination in the land. Disunited, they fought and fell—Hindu with Hindu, Mohammedan with Mohammedan, Hindu with Mohammedan. Provincial feelings, racial jealousies, caste prejudices, unstable political conditions in the eighteenth century made it easy for Englishmen to make themselves masters of India—the flag follows trade. It is no use abusing the one or the other party; let nature test out the result—the fittest shall survive. England's aggressiveness is unpardonable; India's weakness in these days is condemnable. For a period of 160 yeas, India has been under British rule; two-thirds of India under direct British rule; one-third being under feudatory Indian princes. The darkest period in Indian history! India, who boasts of her high civilization, of the Vedas, of the Upanishads, of the Puranas, of Buddha, of Ashoka, of Vikrama, of Kalidas, of Akbar, of the Taj Mahal, fell into the hands of commercial brigands, of adventurous upstarts, who had no moral scruples, who paralyzed Indian industries, who discouraged the spread of education among the people, who by heavy taxation, that is, by robberry, organised and civilized, made the richest country in the world the poorest! Economically India has been bled white, industrially she has been crippled, politically she has been wrecked, morally she has been stunted, physically dwarfed-these are a few of the many beneficent results of Critish Imperialism in India! But for these ills, India has to thank none but herself. Why was she so disunited? Why was she not organized? Why did she co-operate with the exploiting foreigners? Why did she not have the courage to refuse to co-operate with a foreign government in oppressing herself?

In these searching questions lies hidden the solution of the Indian problem. The people realize their past errors and are ready to correct them. The consciousness of national unity has broken down the caste barriers and provincial prejudices. They had refused to be fellow-brothers in prospertity, now they are with alacrity organizing themselves as fellow sufferers in poverty. The insults and humiliations inflicted upon the people, the discrimination between the Indians and the Englishmen, among others, are the chief causes of Indian unrest. India's self respect is being assaulted; India is seething with discontent.

A word in regard to the constructive part to be played by the Panchayats. Just as the Soviets are the spontaneous growth of the Russian soil, so are the Panchayats the spontaneous growth of the Indian soil. From times immemorial, the population has been rural rather than urban. To-day 80 per cent. of the population is rural and about the same percentage is agricultural. The villages have always had a Panchayat of their own. The Panchayat consists of five prominent persons elected by the village community to supervise and safe-gaurd their interests. In the West the tendency in Government is toward centralization, in India toward decentralization. The village community has always—prior to the British occupation of India—enjoyed an autonomous self-government. The village community is a perfect unity in itself: it maintains its own carpenters, smiths, physicians, merchants, traders, laborers, teachers, weavers—in fact, all crafts and occupations necessary to the maintenance of civilized society. In the Panchayat used to be vested the powers of the legislature, of the executive, of the judiciary and of the police. A Number of villages would form a district, a number of districts would form a bigger unit and so on, administration being based on the federal principle of government.

THE INDIAN FACTORIES.

(Amendment) Act II of 1922.

The Indian Factories (Amendment) Act II of 1922 has been passed by the Government of India and will come into force on 1-7-1922. Under the Amended Act factory means " any premises wherein or within the precincts of which on any one day in the year not less than 20 persons are simultaneously employed, and steam, water or other mechanical power or electrical power is used in aid of any process for or incidental to making, altering, repairing, ornamenting, finishing or otherwise adapting for transport or for sale any article or part of an article ".

Under Section 33 of this Act every person occupying a factory shall on or before the date on which the factory commences working as such, send to the Inspector a written notice containing full particulars of the factory as are required therein. Failure to send the notice is punishable under Section 41 (j) of the Act and the penatly imposed is a fine extending to Rs. 500.

Occupiers of such factories are therfore hereby advised to take the necessary steps to send the required notice to the Inspector of Factories of the respective Circles by the prescribed time.

USE OF FERTILISERS.
ARTIFICIAL AIDS TO GROWTH.

The increasing scarcity of farmyard and stable manure directs attention to the necessity for making use of other materials for the purpose of maintaining the fertility of the soil. Some rely, and unwisely, on artificial manures alone. They are undoubtedly of great value when used with discrimination, but they cannot replace farmyard manure, for the great merit of this is that it provides humus; if it is unobtainable, such materials as seaweed, leaves, and soft or leafy refuse from the garden must be substituted. The practice of green manuring, which consists of sowing a quick growing crop, such as mustard: and in digging the plants into the ground when they are well developed, is also of value in supplying humus, without which the land cannot be maintained in a fertile state.

If, however, the soil is adequately supplied with humus or, decayed vegetable matter, artificial fertillers can be applied with great benefit. Nitrate, potash, and phosphate are essential to plant growth, and these substances can be supplied conveniently by means of artificial fertilisers.

The effect of an application of nitrate is to promote leaf growth, and this substance is therefore valuable for the lawn and for plants grown for the sake of their leaves. It is often also applied to backward or weakly plants for the purpose of giving them a fillip.

Phosphatic fertilisers assist the flower and fruit-bearing parts of trees and shrubs and are indispensable when it is desired to ensure well-matured growth that is likely to provide abundant blossom or fruit.

Potash is beneficial because it improves the quality of crops, and especially those of certain vegetables, such as potato, parsnip and beetroot, and various fruits. An application of potash is less likely to be needed on cultivated ground, that is not deficient in lime, than the other two fertilisers—nitrate and phosphate, for it is generally present in sufficient quantity except for those crops specially mentioned as needing it.

For general application to garden crops superphosphate of lime, five parts, and sulphate of ammonia, two parts, applied in spring at the rate of three ounces per square yard form a valuable fertiliser.

Amateur gardeners who do not wish to obtain various artificial manures separately, and mix them, must rely on the concentrated fertilisers that are now so largely used. Special mixtures are prepared for different crops, and they are so easly and conveniently applied that they have attained wide popularity among both amateur and professional gardeners.—

("*Morning Post.*".

Suggested Compulsory Commercial Arbitration

The New York Chamber of Commerce is to be congratulated on its courage in demanding legislation making arbitration enforceable in business disputes. The proposal goes beyond merely American contracts, and suggests that in treaties with foreign countries arbitration agreements in commercial contracts made between the respective nationals shall be valid enforceable, and irrevocarble and it is also suggested that the U.S.A. Department of Commerce should urge Chambers of Commerce and other business organisations in all countries to create arbitration, mediation and conciliation commitees for the handling of business disputes. It is a big programme, and we doubt whether international commerce is yet ripe for its adoption, but the very fact that it has been put forward is an indication of the tendencies that are at work.—(*Eastern Commerce*)

Trade Returns of British India

The trade returns of British India for March last published by the Department of Statistics showed an increase in value of both the imports and exports compared with the preceding month. Imports in March were valued at Rs. 2,148 lakhs against Rs. 2,000 lakhs in February. Exports were higher by Rs. 490 lakhs than in the preceding month and amounted to Rs. 2,602 lakhs and the re-exports were valued at Rs. 160 lakhs against Rs. 108 lakhs. As compared with the corresponding month of the last year, imports declined by eleven per cent while exports and re-exports increased by 52 and 54 percent respectively. In twelve months ending March last, there was a decrease of twenty per cent in imports, four per cent in exports, and 22 per cent in re-exports as compared with the last year. Balance of trade was in favour of India to the extent of Rs. 142 lakhs in March last compeared with an adverse balance of Rs. 66 lakhs in the preceding month and of Rs. 444 lakhs a year ago. As regards the export of Indian produce food, drink, and Tobacco compared with March last year showed an increase of Rs. 121 lakhs. There was an increase of Rs. 157 lakhs in the exports of grain, pulse, atta flour, while tea declined by Rs. 34 lakhs.

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